THE RELATIONSHIP OF ENTRANCE AGE INTO FIRST GRADE UPON SCHOLASTIC ACHIEVEMENT IN THE ELEMENTARY SCHOOL

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by

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TABLE OF CONTENTS

LIST OF TABLES

TABLE PAGE

LIST OF FIGURES

FIGURE PAGE

CHAPTER I

INTRODUCTION

THE STATEMENT OF THE PROBLEM

The purpose of this study has been to determine if there is any relationship between the entrance age in first grade and scholastic achievement in the elementary school. Specifically, the objective has been to find the answer to one question: Did the children who entered the first grade at an age older than the required six years, tend toward higher scholastic achievement than the younger entrants in grades one through six in six elementary schools in Dade County, Florida?

THE IMPORTANCE OF THE STUDY

With the increased crowding of the classroom and often the need for "double sessions" for classes, there is interest and concern in regard to the entrance age of children in the first grade and the possibility of children entering at a later age than the usual six years. Parents, also, are often concerned when it is necessary for their child to enter the first grade at an older age. There is need to find out if the child who enters the first grade at an age older than six years does better in his scholastic achievement. There is, also, the

possibility that this information may contribute to the relief of classroom crowding and allied problems.

J.J.Forester, writing in a recent issue of School Executive, states that "...it is difficult to convince parents that putting a child into school too early can have a bad effect on his entire school career. The child must be emotionally, physically, and socially ready for school when he enters, or serious maladjustment may result."[1]

It is maintained by Margaret Ammons and John Goodlad that "...the decisions about school entrance age really reflect prior assumptions of what a school is for." They conclude that "...if a school is a place where children who are pronounced 'ready' are received and moved through a series of tasks deemed essential to schooling, then research into what happens to children admitted at various ages into the existing school program is needed."[2]

Inez King in a study made at the Oak Ridge Elementary School, Oak Ridge, Tennessee, found that "...there is indication that younger entrants will have difficulty attaining up to grade level in academic skills and a large

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[1] J.J.Forester, "At What Age Should a Child Start School?", School Executive, 74:80, March, 1955.

[2] M.P.Ammons and J.I. Goodlad, "When to Begin:Dimensions of the First Grade Entrance Age Problem," Childhood Education, 32:26, September, 1955.

portion of them may fall far below grade level standards." She further states that "...having attained a few additional months of chronological age at the beginning of grade one is an important factor in the child's ability to meet the imposed restrictions and tensions that school necessarily presents."[3]

In an early study, H. M. Partington felt that "... a relative large portion of the pupils at all entrance age levels, except those who entered at 7.0 and 7.5 years of age, attained high achievement."[4]

Such conflicting conclusions as the preceding show the need for additional clarification and the desirability of further research in this area of elementary education.

THE SETTING OF THE STUDY

This study has been centered in six elementary schools in Dade County, Florida. The schools are Kenwood Elementary, Palmetto Elementary, Pinecrest Elementary, Sunset Elementary, David Fairchild Elementary, and South Miami Elementary. The pupils studied were all those in

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[3] I.B. King, "Effects of Age of Entrance into Grade I Upon Achievement in the Elementary School," Elementary School Journal, 55:336, February, 1955.

[4] H.M.Partington, "Relation Between First Grade Entrance Age and Success in the First Six Grades," The National Elementary Principals:Sixteenth Yearbook.(Washington,D.C.:National Education Association, July, 1937), p. 299.

each school who completed the sixth grade in the spring of 1958.

These six elementary schools are especially significant for such a study because they present an unusual cross-section in the socio-economic status of the children enrolled. Palmetto Elementary, Sunset Elementary, and Pinecrest Elementary represent the middle, upper-middle, and upper classes in economic and social environment. While Kenwood Elementary, David Fairchild, and South Miami Elementary represent largely middle and lower-middle status. There is also a scattering of rural environment in Kenwood Elementary.

Another important factor is the large influx of new families establishing residences in the State of Florida, and particularly Dade County. Dade County is one of the fastest growing communities in the United States. Children born in nearly all sections of the United States and all States are enrolled in these six elementary schools.

The variation in socio-economic status and the national geographic representation in these six schools present a micro cross-section for understanding the problem generally.

THE DEFINITION OF TERMS

SCHOLASTIC ACHIEVEMENT: In this study scholastic achievement has been taken to mean the level of achievement as

indicated on the Metropolitan Achievement Tests in areas of Reading, Arithmetic, Spelling, and Englisg; and, the average final grades received by pupils in these subjects: Reading, Spelling, Arithmetic, Writing, Social Studies, and Science.

ELEMENTARY SCHOOL: For the purposes of this study, elementary school means a school organized on the basis of grades one through six.

YOUNG GROUP: The term "Young Group" shall be understood to mean all those pupils who entered the first grade at five years eleven months and younger.

OLD GROUP: The term "Old Group" shall be understood to mean all those pupils who entered the first grade at six years one month and older.

THE PROCEDURE AND SOURCES OF DATA

The procedure used in carrying out this research was to examine the permanent records of the pupils who completed the sixth grade in June, 1958, in six elementary schools in Dade County. The tests results of these pupils in Reading, Arithmetic, Spelling and English on the Metropolitan Achievement Tests given in grade three, grade four, grade five, and grade six were tabulated. The average final grades which they received in Reading, Spelling, Writing, Social Studies, Arithmetic, and Science for grades one through six were tabulated. Their intelligence quo-

tient standings as indicated on the Otis Quick-Scoring Mental Ability Test and the California Short-Form Test of Mental Maturity were cataloged. Each pupil's birth date and first grade entrance date was recorded.

Four major sources provided data for this study:

(1) the cumulative permanent records of the classes completing the sixth grade in the spring of 1958;

(2) the Metropolitan Achievement Tests;

(3) the Otis Quick-Scoring Mental Ability Test;

(4) the California Short-Form Test of Mental Maturity.

CHAPTER II

REVIEW OF THE LITERATURE

There are many fields of study, about which a great deal has been written, which cluster about the problem of entrance age and scholastic achievement, but only a summary of the work bearing specifically on the relation between entrance age and acholastic achievement will be given here.

I. LITERATURE ON EARLY ENTRANCE AGE

John W. Birch, in reporting on the procedure followed in Pittsburgh, shows that children are allowed to enter the first grade early if certain conditions are met. All children seeking such admittance were examined by the school psychologist. They had to have a superior social maturity, superior emotional maturity, superior reading readiness, superior mental capacity. They had to show a mental age of seven years and up, and an intelligence quotient of 130 and up. The requirement of an intelligence quotient of 130 was not enforced at all times. They further had to be reasonably near normal in height and weight. Consideration was taken of the particular first grade and of the instructional program provided for the child. If these conditions were followed, he recommended acceleration by early admission, thereby providing six

full years of elementary education.[1]

Herbert R. Cone emphasized how well younger pupils progress when careful selection is made. For over twenty-three years in Brookline, Massachusetts, children have been admitted to kindergarten and the first grade who would normally have been excluded because of age. Psychological measurements, physical examinations, and health evaluations are used to determine eligibility. Ordinarily, a child may enter kindergarten if he is four years and nine months old by October the first, or may enter first grade if he is five years and nine months old. If he meets the requirments, a child may enter kindergarten as young as four years and three months and may enter first grade as young as five years and three months. A mental age of five years two months is required for the former, and a mental age of six years two months for the latter. The Revised Stanford Binet Scale is the principal determinant. Each child must show that he can successfully complete a given task in forty minutes. Social and emotional maturity and health are checked. Finally the child is admitted "on condition". Approximately fifty-five per cent of the 200 to 250 admitted annually to the first grade are admitted in this manner, as are twenty

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[1]John W. Birch, "Early School Admission for Mentally Advanced Children," Exceptional Child, 21:84, December, 1954.

to twenty-five per cent of the kindergarten class. Cone maintains that in leadership, good deportment, in frequency of social, emotional, and personality maladjustments, the select group is superior.[2] Boyd McCandless supports this view in his survey of the various methods of dealing with the bright young child. Of acceleration, segregation, enrichment, and early school admission, he feels that early school admission is the only practical one at this time and cites the success of the Brookline program.[3]

Louis W. Kazienko, in seeking to understand the relation between quality of initial school experience and later success, studied seventy-seven children. Twenty-three had been in what he calls a "Good Beginner" grade, twenty-three had been in a "Poor Beginner" grade, and thirty-one in first grade only. He found that those who had had the prior experience of either "Good Beginner" or "Poor Beginner" excelled those who started school in the first grade. Yet the type of initial school experience, among pupils of average mental ability, is very important. In Nebraska, where this study was carried on, the "Beginner" grade apparently is similar to kindergarten. The

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[2]Herbert R. Cone, "Brookline Admits Them Early," Nations Schools, 55:46-47, March 1955.

[3]Boyd R. McCandless, "Should A Bright Child Start To School Before He's Five," Education, 77:370, February, 1957.

pupils who had been in a "Poor Beginner" grade showed no particular advantage over pupils in the regular first grade at five years of age. Kazienko reported that the relationship between mental age and achievement was very high, and that much of the success in early grades may be explained by the mental readiness of the pupils to undertake the tasks of basis skills.[4]

In an opinion poll of school superintendents throughout the nation, conducted by Nations Schools, 52.9 per cent of the superintendents indicated that they felt that children should be admitted to school on the basis of mental age. They raised the pertinent questions, however, of tests, type of tests, costs, and administration.[5] David Looney suggests a system of mental age grade placement beginning with a mental age of six years six months in the first grade.[6] Nicholas Vincent cautions, however, that there are many different categories of "age"

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[4]L.W. Kazienko, "Beginning Grade Influence on School Progress," Educational Administration and Supervision, 40:219, April, 1954.

[5]"Age vs. Ability Grouping," Nations Schools, 56:6, August, 1955.

[6]David L. Looney, "The Use of Mental Age Grade Placement in Evaluating Achievement in the Elementary School," School and Community, 44:24, April, 1958.

which should be given consideration as well as mental age if one seeks a true picture of the child.[7]

By means of a questionnaire sent to principals, Arthur Hamalainen sought to learn how well the under-age child made out in school adjustment and in facing problems of scholastic achievement. Ready adjustment in kindergarten by the under age child, was indicated by 76 per cent of the principals. Eleven out of thirty-three schools reported that a mental test was required for early entrance either for kindergarten or first grade. In some instances, a reading readiness test was also required for early entrance into first grade. Ten schools required that the child show adequate social and emotional balance as indicated by principal and teacher observation. Eighty-two per cent of the principals felt that in grades one through three the under-age child faced problems in scholastic achievement. Yet, 79 per cent felt that the over-age child likewise faced such problems. But in grades four through six this ratio dropped to 12 per cent for the under-age, and 16 per cent for the over-age. Fifty-two per cent of the principals believed that normal children would have difficulties in grades one through three, and 39.7 per cent of the principals be-

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[7]Nicholas M. Vincent, "Age, 'Ages', and Efficient Education," Peabody Journal of Education, 34:220, January, 1957.

lieve that these same children would encounter problems in grades four through six.[8]

Concluding an extensive study of children young for their grade, Vera Miller points out that the under-age child may do very well in school. Whether the child is young because of early entrance, primary block, or double promotion at any level, "...the data give little foundation for concern that children younger than the average are injured from the standpoint of mental health by early admittance."[9] "The per cent of children having difficulty in academic work and/or personal adjustment was approximately the same for all age groupings."[10] By teacher judgment, the young children made above average academic achievement. It was concluded that the young child has a good chance for success academically, and that socially his superiority becomes even clearer as he progresses through grades. Chronological age, therefore, was not felt so important in academic, social, and emotional adjustment as many people think.[11]

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[8]Arthur E. Hamalainen, "Kindergarten-Primary Entrance Age In Relation to Later School Adjustment," Elementary School Journal, 52:406, March, 1952.

[9]Vera V. Miller, "Academic Achievement and Social Adjustment of Children Young for Their Grade Placement," Elementary School Journal, 57:257, February, 1957.

[10]Ibid., p.262.

[11]Ibid.

II. LITERATURE ON LATE ENTRANCE AGE

In surveying the accomplishments of five hundred pupils of the Montclair, New Jersey, school system, John Forester sought to ascertain how well they achieved in their school careers from 1926 through high school. He divided them into groupings of brightness and of age. He found that the "Very Bright (121 intelligence quotient or above) Very Old (five years six months and over)" excelled generally in their school careers. The "Very Dull (79 intelligence quotient and below) Very Old" did not do well. The "Very Bright Very Young (four years six months and below)" did fairly well during the elementary school period but evidenced difficulty from junior high school onward..indicated by the securing of many C grades during the secondary period.[12]

Working with two groups, Inez King wished to find effects of entrance age upon achievement. In a group of fifty-four pupils, ages ranged between five years eight months and five years eleven months. The other group ranged between six years five months and six years eight months. Their intelligence quotients were between 90 and 110, with a mean intelligence quotient giving 1.96 advantage to the younger group. While the younger group showed

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[12] J.J. Forester, "At What Age Should A Child Start School?," School Executive, 74:80, March, 1955.

to good advantage in many instances, in the overall picture Miss King concluded that a few additional months of chronological age at the beginning of first grade was a factor important to the successful achievement of the child.[13]

Discussing the development of concepts in children, W. Edgar Vinacke stated that at six years there is a marked shift to more logical and differentiated concepts. Increasing age, he believes, is the single most important variable in concept formation.[14] Lowell Carter trying to see the effects of early school entrance, matched fifty under age pupils with fifty normal age pupils (six years old on or before September first). He matched them in pairs according to intelligence quotient. He discovered that chronological age has more effect on boys than on girls. In conclusion he said that "...the chronologically older pupil appears to have the advantage in academic achievement over the young child when given the same school experiences."[15]

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[13] I.B. King, "Effects of Age of Entrance into Grade I Upon Achievement in the Elementary School," Elementary School Journal, 52:331, February, 1955.

[14] W. Edgar Vinacke, "Concept Formation in Children of School Ages," Education, 74:527, May, 1954.

[15] Lowell B. Carter, "The Effects of Early School Entrance on the Scholastic Achievement of Elementary School Children in the Austin Public Schools," The Journal of Educational Research, 50:91, October, 1956.

In a early study, H. M. Partington said that many of the youngest children are not only capable of achieving excellent results, but actually do so. Low chronoligcal age, however, is a handicap to many children. He said, furthermore, that a high intelligence quotient is not in itself a guarantee that a pupil will benefit by entrance in first grade at an early age. He recommended that six years to six years and eleven months were the most satisfactory ages for first grade entrance.[16]

A recent study was instituted by the Legislative Research Commission of the Commonwealth of Kentucky about what should be the entrance age of pupils. Teachers' judgments of the performance of students in Reading, Arithmetic, and Social Adjustment were obtained. First grade entrance age was related to the development of leadership qualities in high school students, and age of entrance was correlated with academic failure in first grade. It was found that the "early starters" (five years, eight months to five years, eleven months) produced fewer high school leaders. In Reading, Arithmetic, and Social Adjustment, the "late starters" (six years, four months to six years, seven months) excelled. The early starters performed better in class work and therefore were required

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[16]H.M. Partington, "Relation Between First Grace Entrance Age and Success in the First Six Grades," The National Elementary Principals: Sixteenth Yearbook. (Washington, D.C.:National Education Association,July,1937).

to repeat less frequently than those who entered late. It was pointed out that this was probably due to the fact that the "early starters" were in some respects a "select" group due to parents who believed strongly in education and en encouraged and supported them in their school work, and because of those who were precocious and mature.[17]

It would seem that emphasis, in many of these studies, has been often placed on identifying and aiding the gifted child, or child of high intellectual potential. It is equally true that many other facets are to be taken into consideration. A child may be bright and not achieve, or of average ability and make a good record. Two recent studies have brought this out forcefully. John Gowan, investigating the under-achievement of gifted students, summarized that the under-achievement of a gifted student is the social or asocial response of the individual to proper stimulation either given or denied by parents or educational experiences.[18] Ralph Robinowitz sought to learn the attributes of pupils who were achieving beyond their level of expectancy. Personal interviews and questionnaires were employed. He reported that the student who is doubtful of

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[17]"School Entrance Age," Research Staff Legislative Research Commission, Commonwealth of Kentucky, Research Publication No. 54. January, 1958.

[18]John C. Gowan, "Dynamics of Underachievement of Gifted Students," Exceptional Child, 24:98, November,1957.

of his acceptance by his family and peers may seek more secure status by means of academic achievement beyond his level of expectancy.[19]

Wishing to find the relation of parental attitudes and academic achievement by pupils, Elizabeth Drews and John Teahan selected forty mothers of pupils with intelligence quotients of 130 or more ("high achievers"), and mothers of pupils with intelligence quotients of 93 to 120 ("low achievers"). These mothers were given an attitude type questionnaire. It was found that the mothers of "high achievers" were more authoritarian and restrictive in the treatment of their children than the mothers of the "low achievers".[20]

These studies witness to the variance in opinion which exists in regard to the most favorable age for entrance into first grade and in regard to the best conditions for insuring high achievement. When very careful examination and evaluation of the child is made before enrollment, the chances of successful adjustment and achievement by the younger pupil are greatly increased.

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[19]Ralph Robinowitz, "Attributes of Pupils Achieving Beyond Their Level of Expectancy," Journal of Personality, 24:309, March, 1956.

[20]Elizabeth M. Drews and John Teahan, "Parental Attitudes and Academic Achievement," Journal of Clinical Psychology, 13:328, October, 1957.

In some localities, for many years, children of apparent high ability have been admitted early. Some authors, however, feel strongly that the chronologically older child will do better.

CHAPTER III

ANALYSIS OF DATA

COMPOSITION OF GROUP STUDIED

The cumulative permanent records and test data cards of 674 pupils were examined and information secured. The information for eighty-six pupils was eliminated because it was too incomplete for the purpose of this study. The entrance age into first grade was calculated. A full month was counted if the time period was more than one half of a month. Fifty-nine more pupils were eliminated whose entrance age was six years old. The remaining 529 pupils were divided into two groups, the Old Group and the Young Group. The Old Group was composed of all those whose entrance age into first grade was six years one month or more. The Young Group was composed of all those whose entrance age into first grade was five years eleven months or less. There were 346 pupils in the Old Group and 183 pupils in the Young Group.

The frequency and percentage of pupils in each age level are shown in Tables I and II. Table I shows that 95.3 per cent of the Old Group are between the ages of six years one month and six years eight months. Table II shows that 93.3 per cent of the Young Group are included in five years eleven months and five years seven months.

TABLE I

DISTRIBUTION OF OLD GROUP BY ENTRANCE AGE FIRST GRADE

AGE Yr. - Mo.	FREQUENCY f	PER CENT P
8 - 0	1	.3
7 - 11	1	.3
7 - 10	1	.3
7 - 9	0	0.0
7 - 8	1	.3
7 - 7	0	0.0
7 - 6	1	.3
7 - 5	1	.3
7 - 4	0	0.0
7 - 3	1	.3
7 - 2	1	.3
7 - 1	0	0.0
7 - 0	3	.9
6 - 11	0	0.0
6 - 10	3	.9
6 - 9	2	.6
6 - 8	18	5.2
6 - 7	43	12.4
6 - 6	43	12.4
6 - 5	44	12.7
6 - 4	41	11.8
6 - 3	38	10.9
6 - 2	56	16.2
6 - 1	47	13.7
Sums.....	346	

TABLE II

DISTRIBUTION OF YOUNG GROUP BY ENTRANCE AGE FIRST GRADE

AGE Yr. - Mo.	FREQUENCY f	PER CENT P
5 - 11	50	27.3
5 - 10	46	25.1
5 - 9	42	22.9
5 - 8	26	14.2
5 - 7	7	3.8
5 - 6	1	.5
5 - 5	1	.5
5 - 4	0	0.0
5 - 3	3	1.6
5 - 2	0	0.0
5 - 1	2	1.1
5 - 0	3	1.6
4 - 11	1	.5
4 - 10	0	0.0
4 - 9	1	.5
	183	

The policy of Dade County is that a child may enter the first grade if he will be six years of age on or before the following January first. Yet, we find 24.3 per cent below five years nine months. Enrollment in a private school and transference to public school or enrollment out of state will account for a large part of this percentage. Of the entire group of 588, 10.04 per cent were six years old, 58.84 per cent were in the Old Group and 31.12 per cent were in the Young Group. Ages in the Old Group range from six years one month to eight years. Ages in the Young Group range from five years eleven months to four years nine months. The four years nine months old pupil was originally enrolled out of state, and the eight year old pupil is of Mexican birth. There were one hundred and sixty-nine boys and one hundred and seventy-seven girls in the Old Group. There were eighty-four boys and ninety-nine girls in the Young Group.

For the purpose of this study, the Old Group has been compared with the Young Group in order to determine whether or not the Old Group made higher scholastic achievement than the Young Group.

TECHNIQUES USED

Frequency distributions, for the Old Group and the Young Group, were made of the grade equivalent achieve-

ments on the Metropolitan Achievement Tests in each of the following subject areas: Reading, Arithmetic, Spelling, and English. The achievements in the Elementary Battery given in the third grade and the Intermediate Battery--Partial given in the sixth grade in Reading, Arithmetic, and Spelling were employed. The achievements in English in the fourth grade and in the sixth grade were used since English is not included in the Elementary Battery for third grade.

Frequency polygons were constructed to illustrate the relationship of the Old Group and the Young Group in each subject area at each respective grade level.

Frequency distributions were made of the intelligence quotients of the pupils in the Old and Young Groups as determined by their average scores on the Otis Quick-Scoring Mental Ability Test and the California Short-Form Test for Mental Maturity. A frequency polygon was drawn to show this comparison.

The average grades in Reading, Spelling, Writing, Social Studies, Arithmetic, and Science for six years were surveyed in order to determine the total number of E's (Excellent) earned by each Group.

The means, where applicable, were computed.

ACHIEVEMENT IN READING

In the frequency distribution of achievements in

Reading, the records of 316 pupils in the Old Group and 158 pupils in the Young Group were involved. (From distribution to distribution the total number will vary from the total number of pupils studied in each Group because that particular part of a test was missed and no grade recorded.) The data with regard to the frequency distribution in Reading in the third grade are presented in Table III. There is a range in grade equivalent of from 1.4 to 5.5 for the Young Group and from 1.1 to 5.8 for the Old Group. The mode for the Old Group occurs at the 3.2-3.4 interval. The mode for the Young Group occurs at 2.6-2.8 interval. Thirty-four and two tenths per cent of the Old Group are below the interval containing grade level, and 30.3 per cent of the Young Group are below this interval. This means that more of the Young Group are found at the grade level interval and above than the Old Group. At every interval above grade level except two the percentage of the Old Group is less than the percentage of the Young Group, while below grade level the opposite is true except at one interval.

Figure 1 illustrates this relationship. The polygon for the Old Group shows greater regularity. There are two sharp inversions in the polygon of the Young Group. One of these occurs following the beginning interval of 1.4-1.6. The other is at the 3.8-4.0 interval. Only one interval intervenes between 3.6 and 4.2, so it

TABLE III

FREQUENCY DISTRIBUTIONS OF ACHIEVEMENTS IN READING ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN THIRD GRADE

GRADE EQUIVALENT	YOUNG GROUP f_1	OLD GROUP f_2	PERCENTAGE P_1	PERCENTAGE P_2
5.6—5.8		2		.6
5.3—5.5	4	3	2.5	1.0
5.0—5.2	9	13	5.7	4.1
4.7—4.9	11	16	7.0	5.1
4.4—4.6	11	19	7.0	6.0
4.1—4.3	14	26	8.9	8.2
3.8—4.0	10	28	6.3	8.9
3.5—3.7	17	31	10.8	9.8
3.2—3.4	16	39	10.1	12.3
2.9—3.1	18	31	11.4	9.8
2.6—2.8	22	33	13.9	10.4
2.3—2.5	10	30	6.3	9.5
2.0—2.2	10	28	6.3	8.9
1.7—1.9	2	12	1.3	3.8
1.4—1.6	4	4	2.5	1.3
1.1—1.3		1		.3
Sums.....	158	316	100.0	100.0

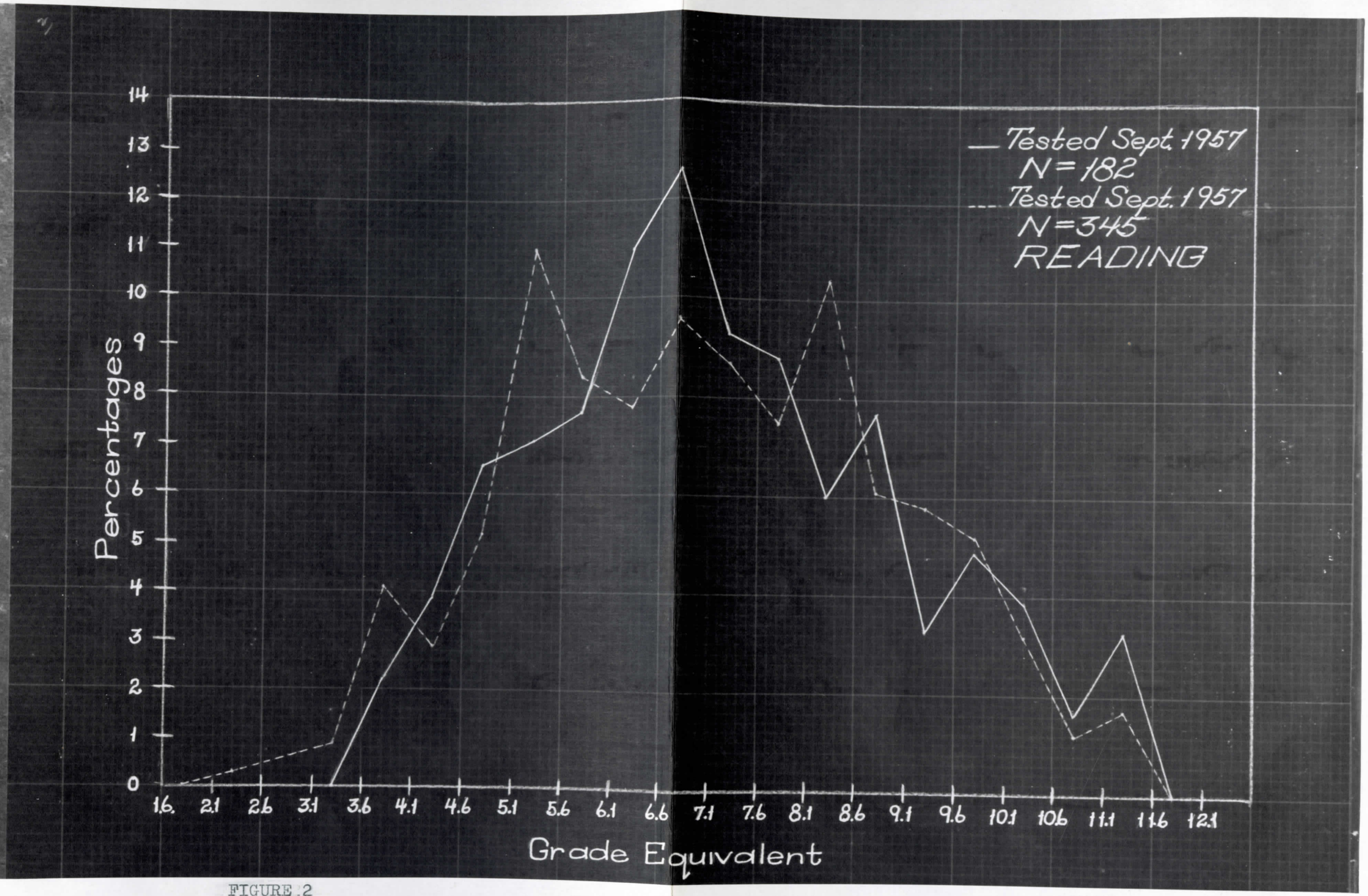

FIGURE 2
DISTRIBTUIONS OF ACHIEVEMENTS IN READING
ON METROPOLITAN ACHIEVEMENT TEST
FOR OLD GROUP AND YOUNG GROUP
SIXTH GRADE

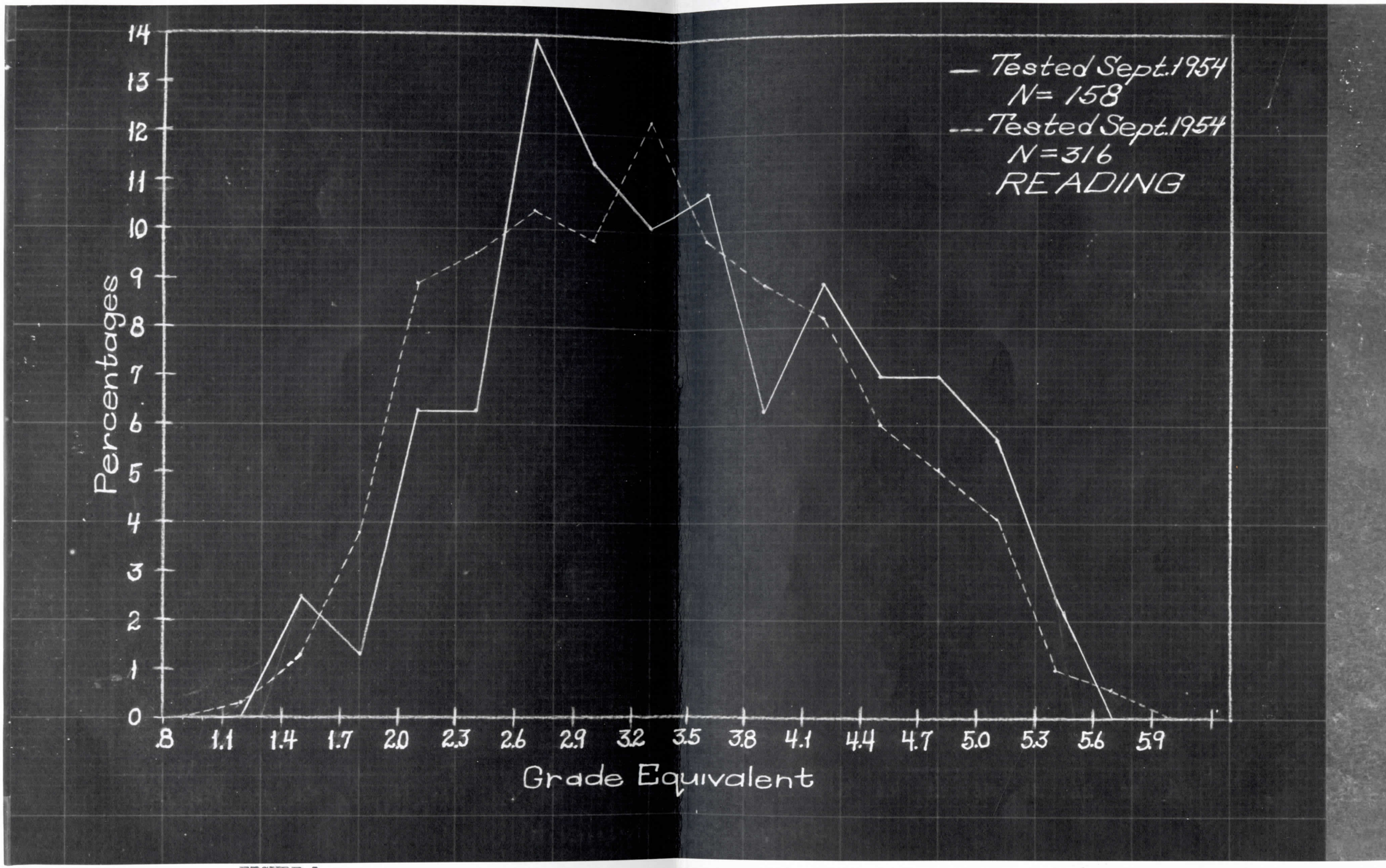

FIGURE 1
DISTRIBUTIONS OF ACHIEVEMENTS IN READING
ON METROPOLITAN ACHIEVEMENT TEST
FOR OLD GROUP AND YOUNG GROUP
THIRD GRADE

is unlikely that the distribution for the Young Group is bimodal. It does show that in the upper achievement the Young Group exceeded the old.

The data for the distribution for Reading in the sixth grade is presented in Table IV. The range in grade equivalent is from 2.1-11.5 for the Old Group, and from 3.6-11.5 for the Young Group. The mode for the Old Group occurs at the 5.1-5.5 interval, and there is a secondary mode at the 8.1-8.5 interval. The mode for the Young Group occurs at the 6.6-7.0 interval. For the Old Group, 24.4 per cent are below the interval containing grade level, and 19.8 per cent of the Young Group are below this interval. In other words, 67.2 per cent of the Old Group achieved above the interval containing grade level, and 72.5 per cent of the Young Group achieved above the interval containing grade level. Involved were 345 pupils in the Old Group and 182 pupils in the Young Group.

From Figure 2, one would conclude that the Old Group achievement is very scattered, beginning below that of the Young Group and extending to the same upper level. Both the Old and Young Groups reach the interval 11.1-11.5, the Young Group exceeding the Old nearly twice as much in per cent of achievement at this level. The achievement of the Young Group is 25 per cent greater than that of the Old Group at the interval which contains the mode of the Young Group, which is an interval whose mid-point is

TABLE IV

FREQUENCY DISTRIBUTIONS OF ACHIEVEMENTS IN READING ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN SIXTH GRADE

GRADE EQUIVALENT	YOUNG GROUP f_1	OLD GROUP f_2	PERCENTAGE P_1	PERCENTAGE P_2
11.1--11.5	6	6	3.3	1.7
10.6—11.0	3	4	1.7	1.2
10.1—10.5	7	11	3.9	3.2
9.6—10.0	9	18	4.9	5.2
9.1— 9.5	6	20	3.3	5.8
8.6— 9.0	14	21	7.7	6.1
8.1— 8.5	11	36	6.0	10.4
7.6— 8.0	16	26	8.8	7.5
7.1— 7.5	17	30	9.3	8.7
6.6— 7.0	23	33	12.6	9.6
6.1— 6.5	20	27	11.0	7.8
5.6— 6.0	14	29	7.7	8.4
5.1— 5.5	13	38	7.1	11.0
4.6— 5.0	12	18	6.6	5.2
4.1— 4.5	7	10	3.9	2.9
3.6— 4.0	4	14	2.2	4.1
3.1— 3.5		3		.9
2.6— 3.0		0		0.0
2.1— 2.5		1		.3
Sums.....	182	345	100.0	100.0

eight months above grade level. The achievement of the Old Group is 40 per cent greater than that of the Young Group at the interval containing the secondary mode of the Old Group. The actual mode of the Old Group is seven months below grade level.

ACHIEVEMENT IN ARITHMETIC

The achievements of 316 pupils in the Old Group and 157 pupils in the Young Group were included in the frequency distribution for Arithmetic in the third grade. The data for this distribution are given in Table V. For the Old Group, the range in grade equivalent achievement is from 1.5-4.7, and for the Young Group from 1.5-6.2. The mode for the Old Group is found at the 2.7-2.9 interval. The mode for the Young Group is at the same interval. The Old Group shows 35.8 per cent above the interval containing grade level. The Young Group has 26.2 per cent above this interval. A little over half of the members of the Young Group are below the grade level interval. The Old Group has 43.3 per cent below that level. While it would appear from the range of the two Groups that the Young Group's achievement extended a great deal beyond that of the Old Group, this is due to the fact that one pupil in the Young Group made an achievement in Arithmetic in the 6.0-6.2 interval. The next interval below this one in which there is frequency is the 3.9-4.1

TABLE V

FREQUENCY DISTRIBUTIONS OF ACHIEVEMENTS IN ARITHMETIC ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN THIRD GRADE

GRADE EQUIVALENT	YOUNG GROUP f_1	OLD GROUP f_2	PERCENTAGE P_1	PERCENTAGE P_2
6.0—6.2	1		.6	
5.7—5.9	0		0.0	
5.4—5.6	0		0.0	
5.1—5.3	0		0.0	
4.8—5.0	0		0.0	
4.5—4.7	0	1	0.0	.3
4.2—4.4	0	1	0.0	.3
3.9—4.1	5	21	3.2	6.6
3.6—3.8	13	37	8.3	11.7
3.3—3.5	22	53	14.0	16.8
3.0—3.2	33	66	21.0	20.9
2.7—2.9	44	70	28.0	22.2
2.4—2.6	27	39	17.2	12.3
2.1—2.3	10	21	6.4	6.6
1.8—2.0	1	6	.6	1.9
1.5—1.7	1	1	.6	.3
Sums.....	157	316	99.9	99.9

interval. This is made apparent when one refers to Figure 3.

At first glance, the distribution shown in Figure 3 appears to reveal positive skewness. On closer observation, and by reference to Table V, it is seen that the extreme achievement of one pupil in the Young Group is responsible for this appearence. Actually, the distribution is regular, although it is coarser because of the necessity of crediting this high achievement. With this exception, the frequencies for the two groups are very similar in appearence. Both groups start at the same interval. The mode for both groups is at the 2.8 G.E., but the percentage for the Old Group is 22.2 per cent, and 28.0 per cent for the Young Group. The achievement of the Old Group exceeds that of the Young Group from the grade level interval on, with the one exception mentioned. Both groups have practically the same number represented at the grade level interval.

The achievements of 344 pupils in the Old Group and 182 pupils in the Young Group were included in the frequency distribution for Arithmetic in the sixth grade. The data for this distribution are given in Table VI. For the Old Group, the range in grade equivalent achievement is from 3.3-9.7, and for the Young Group it is from 3.3-9.2. The mode for the Old Group is at the 5.8-6.2 interval. The mode for the Young Group is at the same

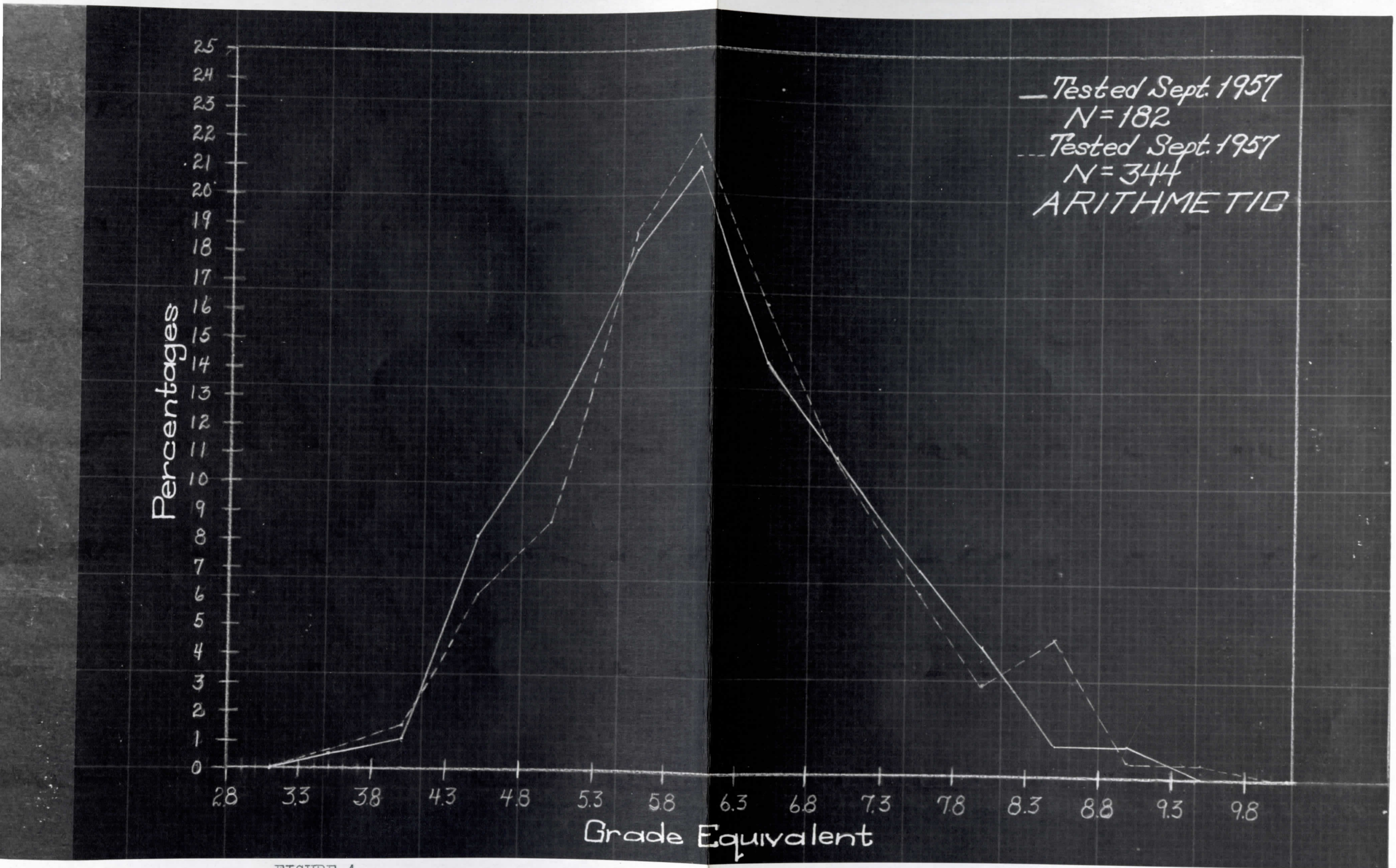

FIGURE 4
DISTRIBUTIONS OF ACHIEVEMENTS IN ARITHMETIC
ON METROPOLITAN ACHIEVEMENT TEST
FOR OLD GROUP AND YOUNG GROUP
SIXTH GRADE

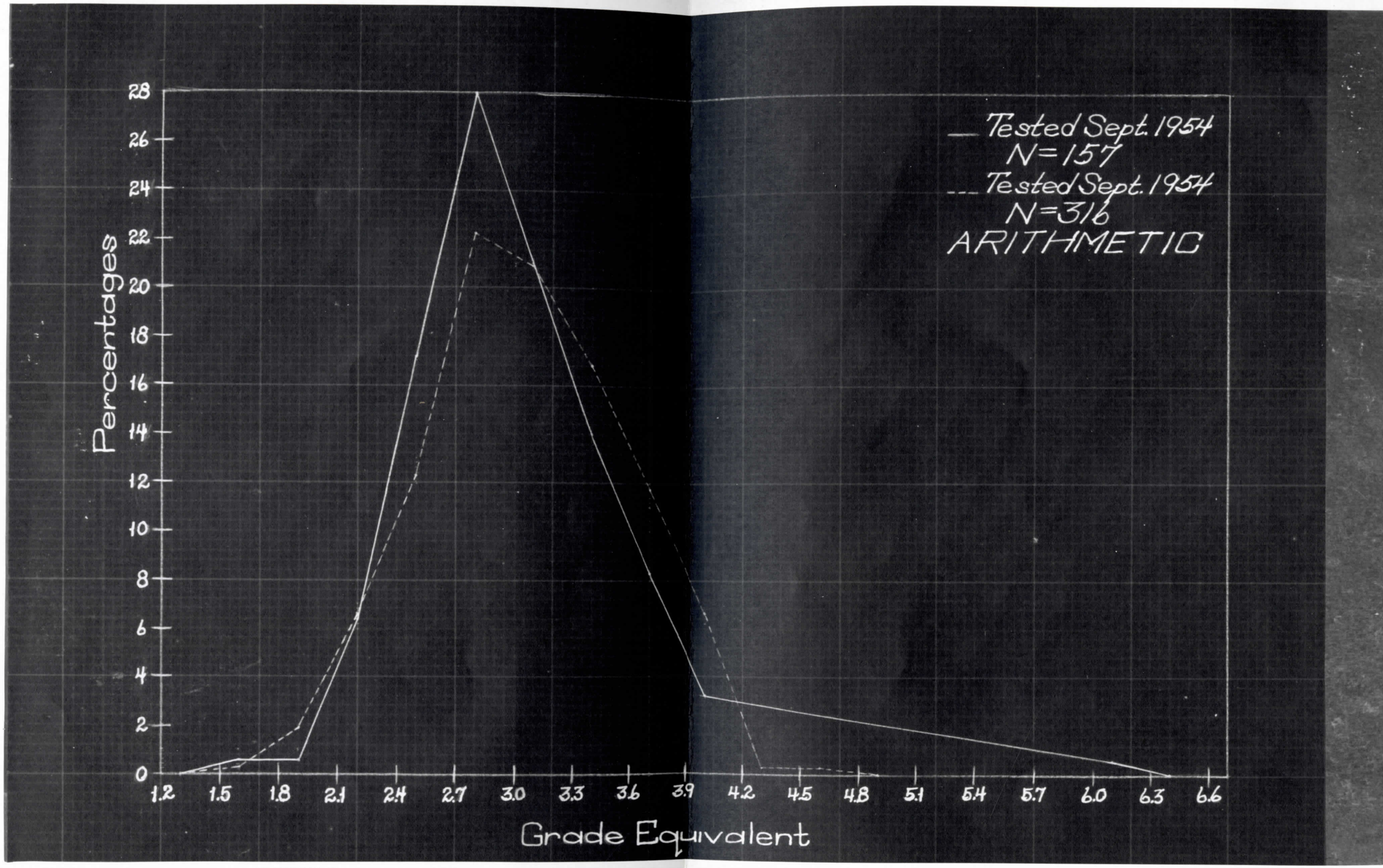

FIGURE 3
DISTRIBUTIONS OF ACHIEVEMENTS IN ARITHMETIC
ON METROPOLITAN ACHIEVEMENT TEST
FOR OLD GROUP AND YOUNG GROUP
THIRD GRADE

TABLE VI

FREQUENCY DISTRIBUTIONS OF ACHIEVEMENTS IN ARITHMETIC ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN SIXTH GRADE

GRADE EQUIVALENT	YOUNG GROUP f_1	OLD GROUP f_2	PERCENTAGE P_1	PERCENTAGE P_2
9.3—9.7		1		.3
8.8—9.2	2	2	1.1	.6
8.3—8.7	2	16	1.1	4.7
7.8—8.2	8	11	4.4	3.2
7.3—7.7	13	22	7.1	6.4
6.8—7.2	20	37	11.0	10.8
6.3—6.7	26	56	14.3	16.3
5.8—6.2	38	77	20.9	22.4
5.3—5.7	33	64	18.1	18.6
4.8—5.2	22	30	12.1	8.7
4.3—4.7	15	21	8.2	6.1
3.8—4.2	2	5	1.1	1.5
3.3—3.7	1	2	.5	.6
Sums.....	182	344	99.9	100.2

interval. Forty per cent of the Young Group were found below the grade level interval, and 35.5 per cent of the Old Group. In the Old Group, 42.1 per cent were above the grade level interval, and 39.1 per cent in the Young Group. The pupils in both groups were fairly evenly divided on both sides of the grade level.

Figure 4 shows this pattern of even distribution. The two curves are very similar, showing little deviation. Both curves start at the same position and end nearly together. The mode of each group is at grade level. The percentage of the Old Group at this point is slightly larger than that of the Young Group, but each has approximately twenty per cent distribution at this modal interval. The Old Group shows a slight advantage at the 8.3-8.7 interval. Comparison of Figure 4 and Figure 3 shows that, in Arithmetic achievement in the third and sixth grades, the Old Group and the Young Group were very much alike, with the advantage going to the Old Group.

ACHIEVEMENT IN SPELLING

The achievements of 316 pupils in the Old Group and 158 pupils in the Young Group were used in making the frequency distribution for Spelling in the third grade. The data for this distribution are given in Table VII. For the Old Group, the range in grade equivalent achievement is from 1.0-5.1, and for the Young Group it is the

TABLE VII

FREQUENCY DISTRIBUTIONS OF ACHIEVEMENTS IN SPELLING ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN THIRD GRADE

GRADE EQUIVALENT	YOUNG GROUP f_1	OLD GROUP f_2	PERCENTAGE P_1	PERCENTAGE P_2
4.9—5.1	6	11	3.8	3.5
4.6—4.8	7	17	4.4	5.4
4.3—4.5	9	8	5.7	2.5
4.0—4.2	12	30	7.6	9.5
3.7—3.9	12	15	7.6	4.7
3.4—3.6	17	27	10.8	8.5
3.1—3.3	18	37	11.4	11.7
2.8—3.0	27	58	17.1	18.4
2.5—2.7	13	32	8.2	10.1
2.2—2.4	19	27	12.0	8.5
1.9—2.1	7	36	4.4	11.4
1.6—1.8	6	6	3.8	1.9
1.3—1.5	2	10	1.3	3.2
1.0—1.2	3	2	1.9	.6
Sums.....	158	316	100.0	99.9

same range. The mode for the Old Group is found at the 2.8-3.0 interval. The mode for the Young Group is at the same interval. The Old Group has 35.7 per cent of the achievements distributed below the grade level interval. The Young Group has 31.6 per cent below the grade level interval. A little over half of the Young Group were above the grade level interval. The Old Group showed 45.9 per cent above the grade level interval. The grade level interval or better was achieved by 68.4 per cent of the Young Group and by 64.3 per cent of the Old Group.

The relation between the Old Group and the Young Group in achievement in Spelling in the third grade is reflected in Figure 5. The polygon for the Old Group displays serration. The major mode is found at 2.9 G.E. It appears that there are two minor modes at 2.0 G.E. and 4.1 G.E. respectively. Both of these minor modes are separated from the major mode by two or more intervening intervals of lower frequency. The Young Group also has its mode at the 2.9 G.E. level. An inversion appears at the 2.6 G.E. level. The polygon of the Young Group is more regular than that of the Old Group, and seems to indicate more consistent achievement.

The achievements of 344 pupils in the Old Group and 182 pupils in the Young Group were used in making the frequency distribution for Spelling in the sixth grade. The data for this distribution are given in Table VIII.

TABLE VIII

FREQUENCY DISTRIBUTIONS OF ACHIEVEMENTS IN SPELLING ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN SIXTH GRADE

GRADE EQUIVALENT	YOUNG GROUP f_1	OLD GROUP f_2	PERCENTAGE P_1	PERCENTAGE P_2
9.5—9.9	1	3	.5	.9
9.0—9.4	2	6	1.1	1.7
8.5—8.9	7	14	3.9	4.1
8.0—8.4	9	13	4.9	3.8
7.5—7.9	14	19	7.7	5.5
7.0—7.4	27	39	14.9	11.3
6.5—6.9	19	38	10.4	11.0
6.0—6.4	28	45	15.4	13.1
5.5—5.9	21	44	11.5	12.8
5.0—5.4	21	32	11.5	9.3
4.5—4.9	16	37	8.8	10.8
4.0—4.4	6	24	3.3	7.0
3.5—3.9	8	17	4.4	4.9
3.0—3.4	3	11	1.6	3.2
2.5—2.9		0		0.0
2.0—2.4		0		0.0
1.5—1.9		0		0.0
1.0—1.4		0		0.0
.5— .9		0		0.0
.0— .4		2		.6
Sums.....	182	344	99.9	100.0

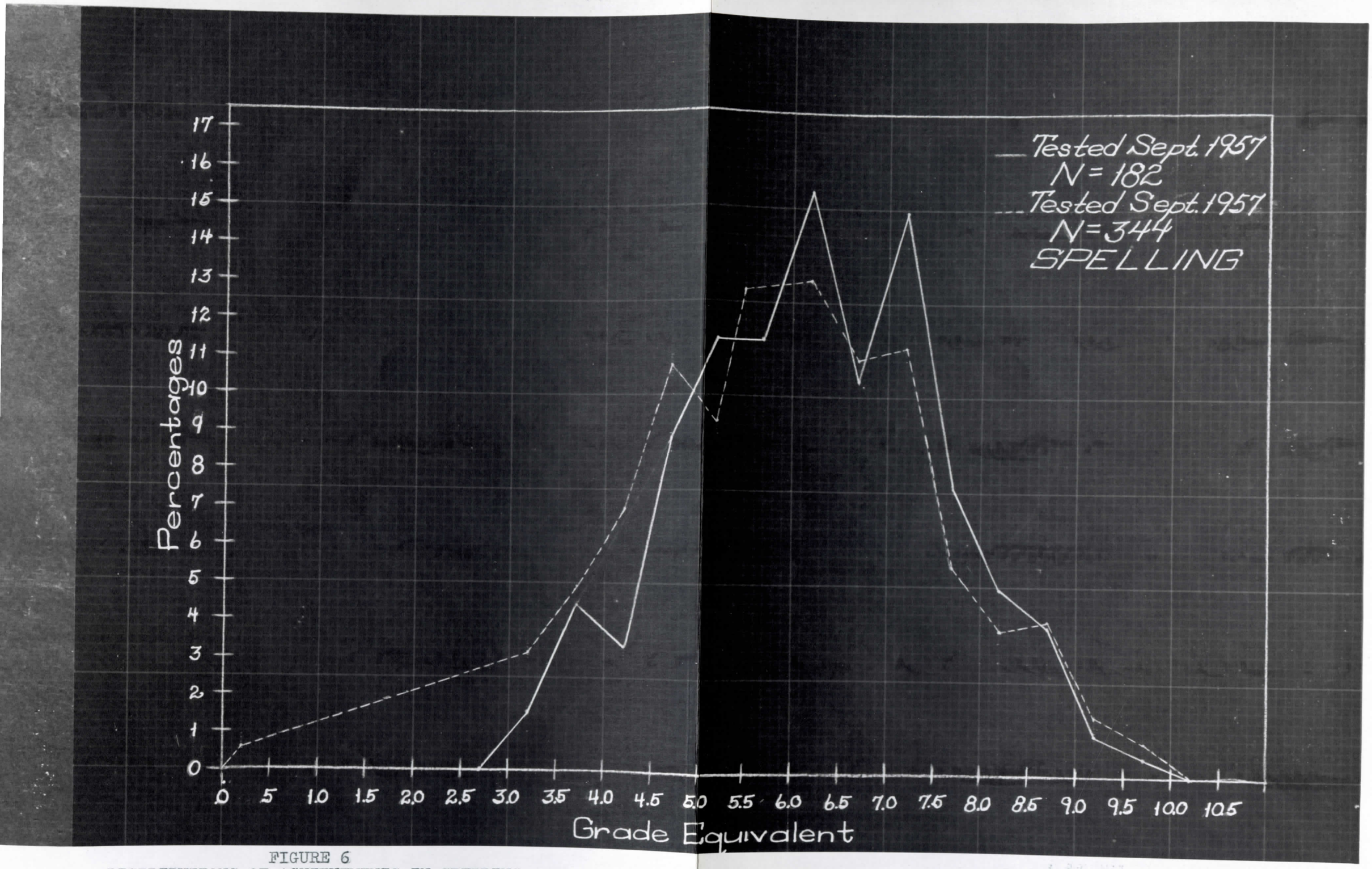

FIGURE 6
DISTRIBUTIONS OF ACHIEVEMENTS IN SPELLING
ON METROPOLITAN ACHIEVEMENT TEST
FOR OLD GROUP AND YOUNG GROUP
SIXTH GRADE

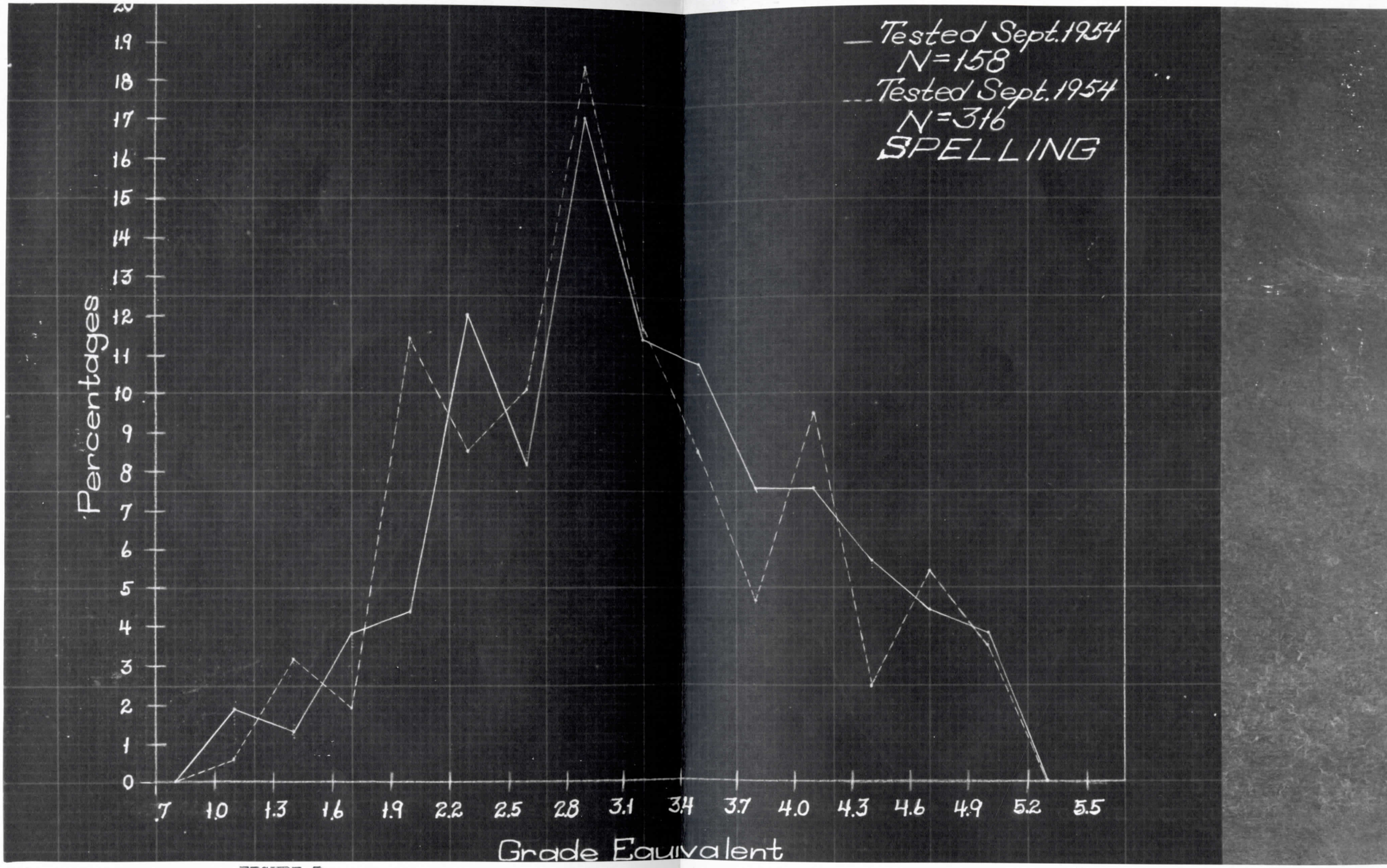

FIGURE 5
DISTRIBUTIONS OF ACHIEVEMENTS IN SPELLING
ON METROPOLITAN ACHIEVEMENT TEST
FOR OLD GROUP AND YOUNG GROUP
THIRD GRADE

For the Old Group, the range in grade equivalent achievement is from 0.0-9.9, and for the Young Group it is the same interval. For the Old Group the interval of the greatest frequency is 6.0-6.4. It is, however, only one less than that of the preceding interval. It seems safe to say, therefore, that the mode lies between these intervals, or approximately at grade level. The Young Group appears to be nearly bimodal, at the 6.0-6.4 interval and the 7.0-7.4 interval. Coarser grouping might show the distribution to be unimodal. Forty-eight per cent of the Old Group were below the grade level interval, and 41.1 per cent of the Young Group were below. Fifty-two per cent of the Old Group were found from the grade level interval and above, and the Young Group showed 58.9 per cent. Over half of the pupils in both groups achieved grade level or better.

Figure 6 shows this high achievement. The low achievement of only two pupils out of 344 accounts for the low beginning of the figure for the Old Group. Aside from this, the same area is covered by both groups. It is apparent from Figure 6 that a larger percentage of the Y oung Group achieved above grade level than those in the Old Group.

ACHIEVEMENT IN ENGLISH

The achievements of 328 pupils in the Old Group

and 178 pupils in the Young Group were tabulated in making the frequency distribution for English in the fourth grade. The data for this distribution are shown in Table IX. For the Old Group the range of grade equivalent achievement is from 1.8-9.7, and for the Young Group it is the same range. The mode for the Old Group is at the 5.8-6.2 interval. The mode for the Young Group is at the same interval. Both distributions have secondary modes at the 3.3-3.7 interval. The Old Group has 32.9 per cent below the grade level interval, and the Young Group has 31.5 per cent. The Old Group showed 67.1 per cent at the grade level interval and above. The grade level interval or better was achieved by 68.5 per cent of the Young Group.

This better than average achievement by both groups is illustrated by Figure 7. The mode and secondary mode of each group is at once apparent. The mode of each group is at 6.0 grade equivalent, or two above grade level. This figure shows that grade equivalent achievement for both groups went as high as the 9.3-9.7 interval. This means that in a fourth grade class one would possibly have found pupils ranging in grade equivalent achievement from 2.0 (midpoint of the lowest interval) to 9.5 (midpoint of the highest interval), with many above grade level. For the most part, the Young Group dominated from grade level upward in this distribution.

TABLE IX

FREQUENCY DISTRIBUTIONS OF ACHIEVEMENTS IN ENGLISH ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN FOURTH GRADE

GRADE EQUIVALENT	YOUNG GROUP f_1	OLD GROUP f_2	PERCENTAGE P_1	PERCENTAGE P_2
9.3—9.7	2	1	1.1	.3
8.8—9.2	0	0	0.0	0.0
8.3—8.7	1	2	.6	.6
7.8—8.2	3	5	1.7	1.5
7.3—7.7	7	6	3.9	1.8
6.8—7.2	5	10	2.8	3.0
6.3—6.7	11	21	6.2	6.4
5.8—6.2	26	41	14.4	12.5
5.3—5.7	15	32	8.4	9.8
4.8—5.2	17	31	9.6	9.4
4.3—4.7	17	32	9.6	9.8
3.8—4.2	18	39	10.1	11.9
3.3—3.7	22	40	12.4	12.2
2.8—3.2	16	21	9.0	6.4
2.3—2.7	13	21	7.3	6.4
1.8—2.2	5	26	2.8	7.9
Sums.....	178	328	99.9	99.9

The achievements of 344 pupils in the Old Group and 182 pupils in the Young Group were tabulated in making the frequency distribution for English in the sixth grade. The data for this distribution are shown in Table X. For the Old Group the range of grade equivalent achievement is from 0.0-11.4, and for the Young Group it is from 3.0-12.4. The mode for the Old Group is at the 6.0-6.4 interval. The mode for the Young Group is at the 5.5-5.9 interval. The Old Group has 36.1 per cent below the grade level interval, and the Young Group has 34.6 per cent. A little less than two thirds (65.4 per cent) of the Young Group achieved at grade level interval and above. The grade level interval or better was made by 63.9 per cent of the Old Group.

The pattern of achievement above grade level as revealed in Figure 7, is once again witnessed to by the results shown in Figure 8. The mode of the Old Group is located at the 6.0-6.4 interval which is also the grade level interval. The mode of the Young Group is located at 5.7 G.E. The form of the distribution of the Young Group is very serrated from the mode forward. The distribution of the Old Group is much more regular except at the 11.0-11.4 interval where there is a rise in achievement indicated. Here again, as in the third grade, one has the situation of a large number of the pupils achieving at grade level or better, with achievement reaching

TABLE X

FREQUENCY DISTRIBUTIONS OF ACHIEVEMENTS IN ENGLISH ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN SIXTH GRADE

GRADE EQUIVALENT	YOUNG GROUP f_1	OLD GROUP f_2	PERCENTAGE P_1	PERCENTAGE P_2
12.0—12.4	1		.55	
11.5—11.9	0		0.0	
11.0—11.4	5	12	2.75	3.5
10.5—10.9	1	5	.55	1.5
10.0—10.4	9	8	4.94	2.3
9.5— 9.9	4	5	2.20	1.5
9.0— 9.4	8	10	4.40	2.9
8.5— 8.9	14	17	7.69	4.9
8.0— 8.4	12	29	6.59	8.4
7.5— 7.9	15	30	8.24	8.7
7.0— 7.4	19	35	10.44	10.2
6.5— 6.9	16	32	8.79	9.3
6.0— 6.4	15	37	8.24	10.8
5.5— 5.9	21	34	11.54	9.9
5.0— 5.4	15	32	8.24	9.3
4.5— 4.9	13	21	7.14	6.1
4.0— 4.4	10	19	5.49	5.5
3.5— 3.9	3	5	1.65	1.5
3.0— 3.4	1	9	.55	2.6
.0— 2.9		4		1.2
Sums.....	182	344	99.99	100.0

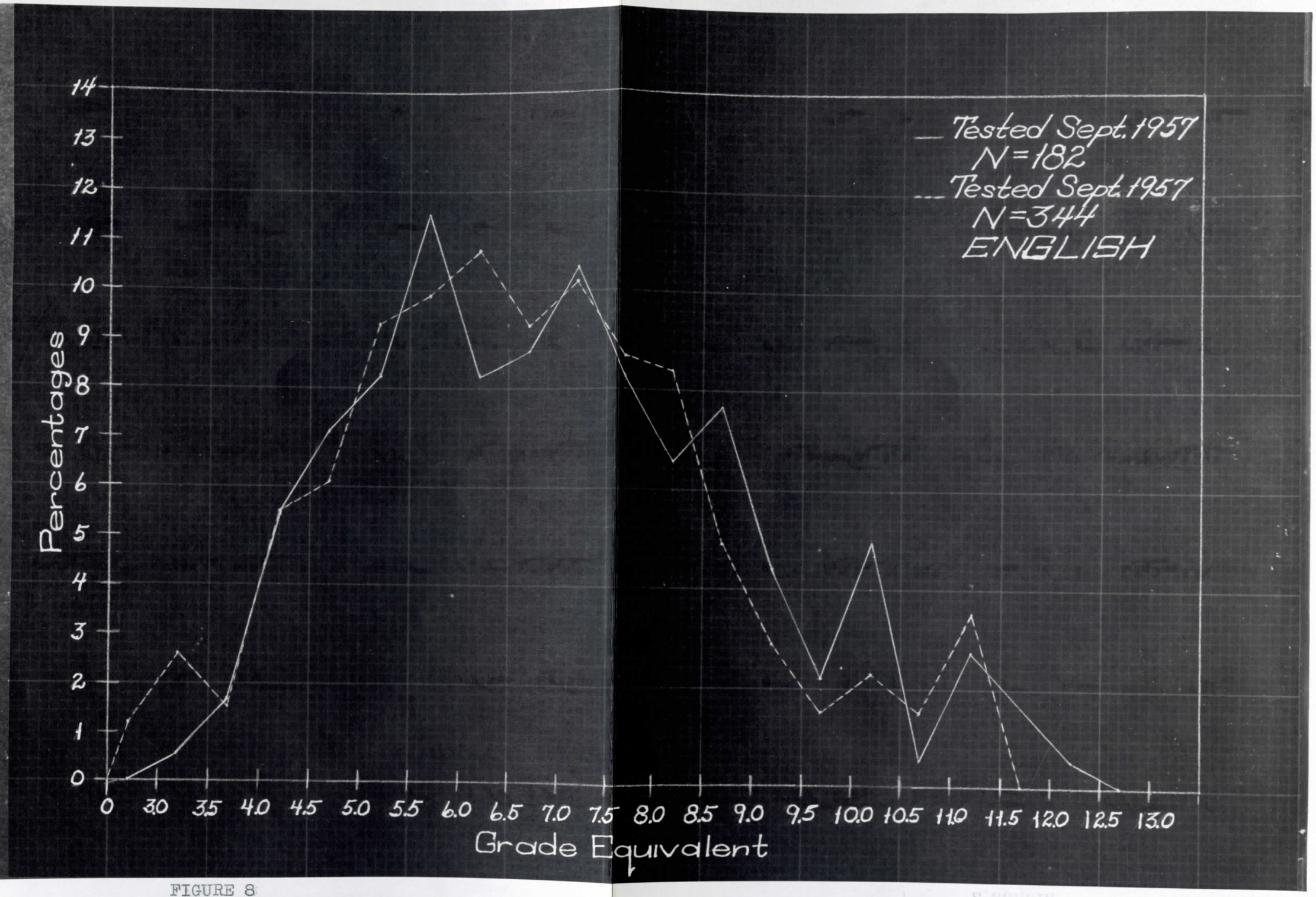

FIGURE 8
DISTRIBUTIONS OF ACHIEVEMENTS IN ENGLISH
ON METROPOLITAN ACHIEVEMENT TEST
FOR OLD GROUP AND YOUNG GROUP
SIXTH GRADE

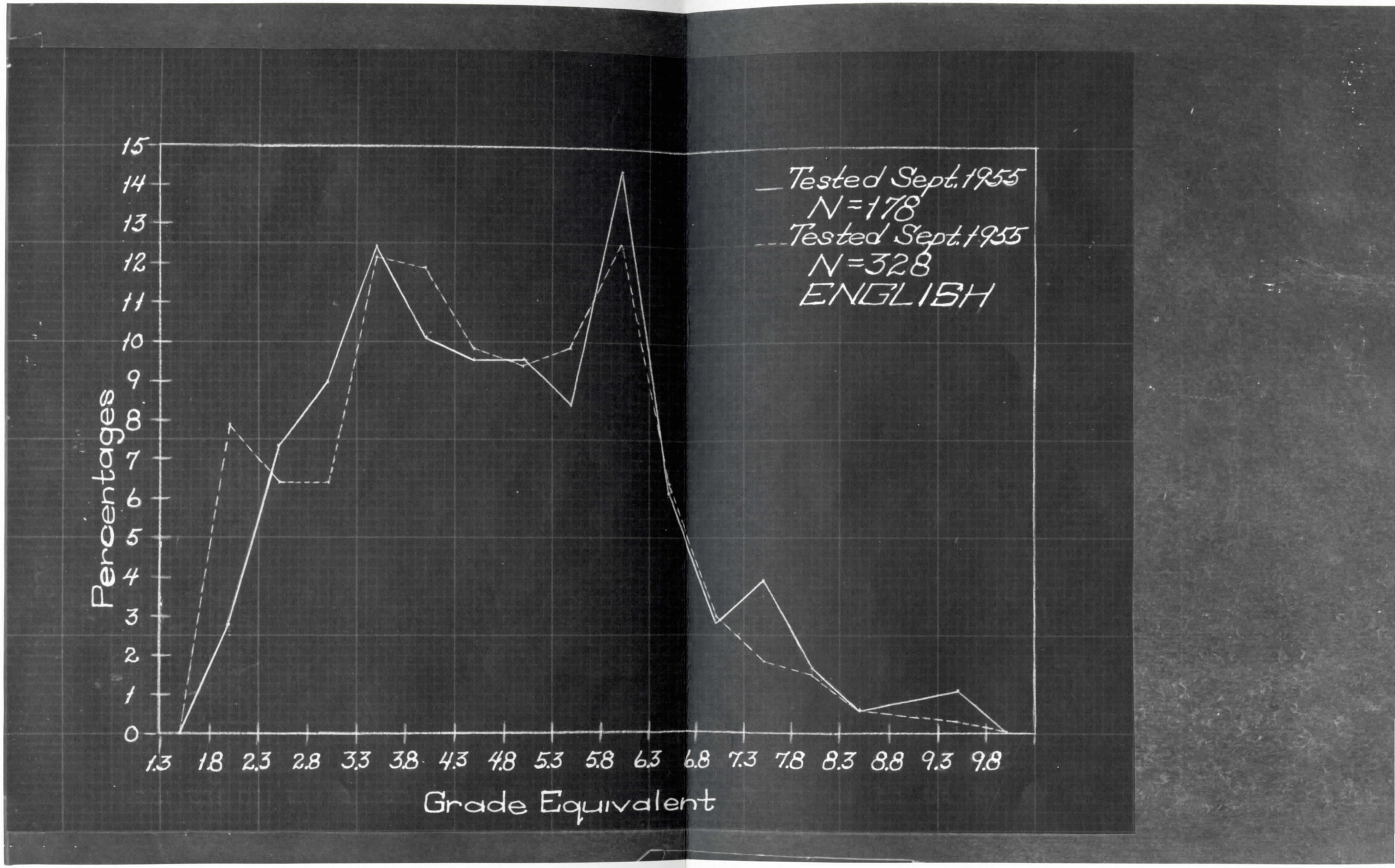

FIGURE 7
DISTRIBUTIONS OF ACHIEVEMENTS IN ENGLISH
ON METROPOLITAN ACHIEVEMENT TEST
FOR OLD GROUP AND YOUNG GROUP
FOURTH GRADE

as high as twelfth grade level. It must be borne in mind that approximately one third of each group achieved below grade level.

INTELLIGENCE QUOTIENTS

Frequency distributions of the intelligence Quotients of the pupils in the Old Group and in the Young Group were made. The data for these distributions are given in Table XI. The intelligence quotients for the Old Group ranged between 75 and 149, and for the Young Group between 70 and 149. The mode for the Old Group is found at 112. The mode for the Young Group is found at the same level. For the Old Group, 76.5 per cent of their intelligence quotients were 100 or above. For the Young Group 84.8 per cent were 100 or above. For the Old Group 13.4 per cent were found ranking 90 or below, and 9.7 per cent for the Young Group. Twenty-two per cent of the pupils in the Old Group ranked in the superior level of 120 and above. Thirty and six tenths per cent of the Young Group ranked in this superior level. The Old Group, therefore, had a few more pupils with intelligence quotients of 90 or below, and fewer pupils in the superior level with intelligence quotients of 120 and above. The differences at these extremes, however, were, in the one instance 3.7 per cent for 90 or below, and in the other instance 8.6 per cent for 120 and above.

TABLE XI

FREQUENCY DISTRIBUTIONS OF INTELLIGENCE QUOTIENTS

I.Q.	YOUNG GROUP f_1	OLD GROUP f_2	PERCENTAGE P_1	PERCENTAGE P_2
145 - 149	1	1	.5	.3
140 - 144	4	4	2.2	1.2
135 - 139	4	2	2.2	.6
130 - 134	9	10	4.9	2.9
125 - 129	13	31	7.1	9.0
120 - 124	25	28	13.7	8.0
115 - 119	21	40	11.5	11.6
110 - 114	31	62	16.9	17.9
105 - 109	21	47	11.5	13.6
100 - 104	26	40	14.2	11.6
95 - 99	10	35	5.5	10.1
90 - 94	9	25	4.9	7.3
85 - 89	3	8	1.6	2.3
80 - 84	4	11	2.2	3.2
75 - 79	1	2	.5	.6
70 - 74	1		.5	
Sums.....	183	346	99.9	100.0

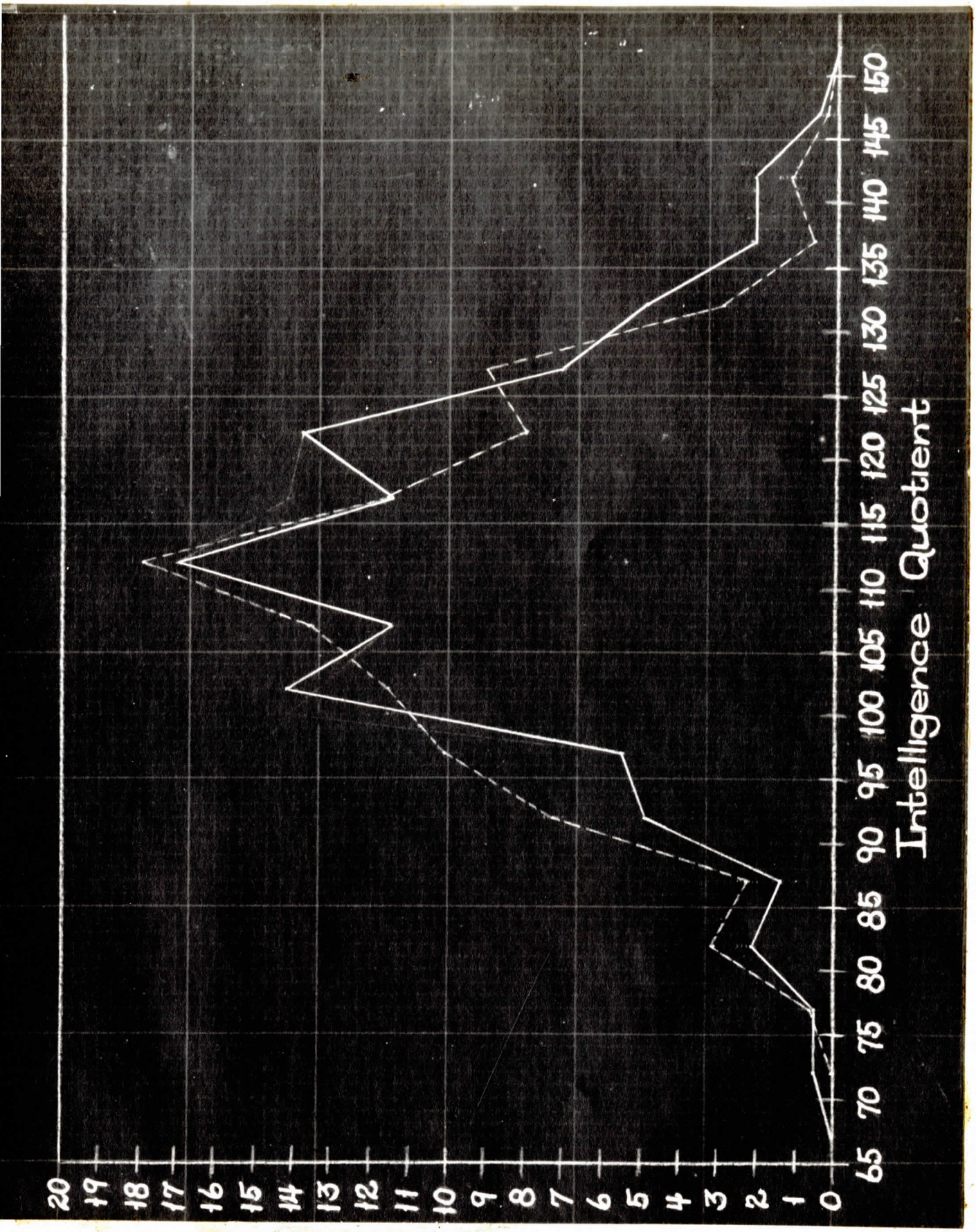

FIGURE 9

--- OLD GROUP —— YOUNG GROUP

PERCENTAGE

The frequency polygons in Figure 9 exhibit these comparisons in intelligence quotients between the Old Group and the Young Group. At the mode the Old Group has 1 per cent greater frequency. The polygon for the Young Group displays secondary modes at 122 and at 102. Below the mode, the Old Group out ranks the Young Group except at the 100-104 interval. Above the mode, the Old Group out ranks the Young Group only at the 125-129 interval. At the extremities of the polygons the patterns are markedly similar with the same dominance prevailing.

MEAN ACHIEVEMENTS

The mean achievements were computed for each subject area: Reading, Arithmetic, Spelling, and English, and at each grade level used in this study. The mean of the intelligence quotients of the pupils in the Old Group and in the Young Group were also computed. The results of these computations are shown in Table XII. The mean intelligence quotient for the Young Group is 2.3 points higher than that of the Old Group. In every subject area, except Arithmetic in the third grade, the Young Group shows a slightly higher mean achievement. This advantage, however, is very small and the mean achievement in each subject is, for both groups, at the same grade equivalent.

TABLE XII

MEAN ACHIEVEMENT

FIELD	YOUNG GROUP	OLD GROUP
I.Q.	111.7	109.4
READING (Third Grade)	3.48 G.E.#	3.34 G.E.
READING (Sixth Grade)	7.23 G.E.	7.10 G.E.
ARITHMETIC (Third Grade)	2.98 G.E.	3.06 G.E.
ARITHMETIC (Sixth Grade)	6.40 G.E.	6.21 G.E.
SPELLING (Third Grade)	3.17 G.E.	3.08 G.E.
SPELLING (Sixth Grade)	6.23 G.E.	6.00 G.E.
ENGLISH (Fourth Grade)	4.77 G.E.	4.58 G.E.
ENGLISH (Sixth Grade)	6.98 G.E.	6.64 G.E.

The computations of these means are found in Appendixes A through I.

G.E. = Grade Equivalent.

AVERAGE GRADE ACHIEVEMENT

The grading procedure employed in the school system of Dade County during the period of time covered by this study used the symbols: E - Excellent; S - Satisfactory; and U - Unsatisfactory. A count was made of the number of E's which were received as average final grades in the subjects of Reading, Writing, Spelling, Social Studies, Arithmetic, and Science for grades one through six by the pupils in the Old Group and in the Young Group. Ordinarily no final average grades in Spelling and Social Studies, and only in part in Science, were given in the first grade. A total of 3,073 E's were received by the Old Group. A total of 1,510 E's were received by the Young Group. It would appear that the Old Group received twice as many E's as the Young Group. The average number of E's received, however, was approximately nine E's for each pupil in the Old Group and eight E's for each pupil in the Young Group. Many of the pupils, in both groups received no final average grade of E in any subject area in six years, while others received twenty-five, or even as high as thirty E's, out of a possible thirty-four.

It was also found that twenty-five pupils, or 13.84 per cent of the Old Group had been retained for an additional year in some grade in grades one through six. Nineteen pupils, or 9.63 per cent of the Young Group had, likewise, been retained.

CHAPTER IV

SUMMARY

In the comparison of the Old Group with the Young Group in this study the following facts were found.

In Reading in third grade, the Old Group has a lower percentage of grade equivalent achievements at every class interval above grade level except two, while below grade level, the opposite is true except at one interval. More of the Young Group are found at the grade level interval and above than the Old Group. In the sixth Grade, 5.3 per cent more of the pupils in the Young Group achieved above the grade level interval than those in the Old Group.

In Arithmetic in third grade, the Old Group made a slightly better showing than the Young Group. Nearly 10 per cent more of the Old Group are found above the grade level interval, while there are more of the Young Group below the grade level interval. In the sixth grade, the pupils in both groups were fairly evenly divided on both sides of the grade level. The mode of each group is at grade level.

In Spelling in third grade, the grade level interval or better was achieved by nearly two thirds of both groups. The mode of each group is at the same interval.

More consistent achievement is indicated for the Young Group. In the sixth Grade, over half of the pupils in both groups achieved grade level or better, with a larger percentage of the Young Group achieving above grade level than those in the Old Group.

In English in fourth grade, the Old Group showed 67.1 per cent at the grade level interval or higher, and 68.5 per cent of the Young Group achieved this interval or higher. The greatest frequency for both groups was at grade level. In the sixth grade, the greatest frequency for the Old Group was at 6.2 G.E., and for the Young Group at 5.7 G.E. A little less than two thirds of the Young Group achieved the grade level interval or above, and 63.9 per cent of the Old Group. The Young Group shows to a little better advantage in English in the third and sixth grades.

The greatest frequency of intelligence quotients for both the Old and the Young Group was at 112. Over three fourths of the Old Group and four fifths of the Young Group had intelligence quotients of 100 or above. The Old Group had a few more pupils than the Young Group with intelligence quotients of 90 or below, and fewer pupils in the superior level with intelligence quotients of 120 and above.

In every subject area, except Arithmetic in the third grade, the Young Group showed a slightly higher

mean achievement. The mean achievement in each subject, however, was at the same grade equivalent for each group.

For neither group was superior achievement signified by the receiving of a great many grades of Excellent. The fact that over 13 per cent of the Old Group and only 10 per cent of the Young Group had been retained may account for some of the slight difference in achievement by the two groups. Yet, retention for a year does not necessarily mean low achievement.

CONCLUSIONS

Within the limits set by this study the following observations are made:

1. No appreciable superiority in achievement was indicated for either the Old Group or the Young Group.

2. The children who were chronologically older when beginning the first grade usually made standard grades of achievement in all subject areas.

3. There does seem to be evidence to show that the child who is young at entrance to first grade can rank as high or higher in scholastic achievement than the older entrant.

4. In so far as the six elementary schools in Dade County, Florida, are concerned, there is no evidence to support the conclusion that the children of older chronological age at entrance to the first grade attained

higher scholastic achievement in the first six years of school.

RECOMMENDATIONS

Further investigations along the present line, together with other factors related to school success, might add greatly to understanding of pupil achievement on the elementary school level.

It would be helpful to see how the pupils who are six years old at entrance to first grade compare in scholastic achievement with those who are older than six and those who are younger than six.

An investigation of the relationship between the achievement of boys and the achievement of girls should be made.

This study has dealt with scholastic achievement. It is realized that there are other facets of the child's development which often play a major roll in the success or the weakening of his school progress.

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APPENDIXES

APPENDIX A

COMPUTATION OF THE MEAN OF ACHIEVEMENTS IN READING ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN THIRD GRADE

(1) GRADE EQUIVALENT	YOUNG GROUP (2) X_i Mid-point	(3) f_1	(4) f_1X_i	OLD GROUP (5) Mid-point	(6) f_2	(7) f_2X_i
5.6—5.8				5.7	2	11.4
5.3—5.5	5.4	4	21.6	5.4	3	16.2
5.0—5.2	5.1	9	45.9	5.1	13	66.3
4.7—4.9	4.8	11	52.8	4.8	16	76.8
4.4—4.6	4.5	11	49.5	4.5	19	85.5
4.1—4.3	4.2	14	58.8	4.2	26	109.2
3.8—4.0	3.9	10	39.0	3.9	28	109.2
3.5—3.7	3.6	17	61.2	3.6	31	111.6
3.2—3.4	3.3	16	52.8	3.3	39	128.7
2.9—3.1	3.0	18	54.0	3.0	31	93.0
2.6—2.8	2.7	22	59.4	2.7	33	89.1
2.3—2.5	2.4	10	24.0	2.4	30	72.0
2.0—2.2	2.1	10	21.0	2.1	28	58.8
1.7—1.9	1.8	2	3.6	1.8	12	21.6
1.4—1.6	1.5	4	6.0	1.5	4	6.0
1.1—1.3				1.2	1	1.2
Sums.....		158 N	549.6		316 N	1056.6

$$\text{Mean} = \frac{\Sigma f_1 X_i}{N} = \frac{549.6}{158} = 3.48$$

$$\frac{\Sigma f_2 X_i}{N} = \frac{1056.6}{316} = 3.34$$

APPENDIX B

COMPUTATION OF THE MEAN OF ACHIEVEMENTS IN READING ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN SIXTH GRADE

(1)	YOUNG GROUP			OLD GROUP		
GRADE EQUIVALENT	(2) X_i Mid-point	(3) f_1	(4) f_1X_i	(5) Mid-point	(6) f_2	(7) f_2X_i
11.1—11.5	11.3	6	67.8	11.3	6	67.8
10.6—11.0	10.8	3	32.4	10.8	4	43.2
10.1—10.5	10.3	7	72.1	10.3	11	113.3
9.6—10.0	9.8	9	88.2	9.8	18	176.4
9.1— 9.5	9.3	6	55.8	9.3	20	186.0
8.6— 9.0	8.8	14	123.2	8.8	21	184.8
8.1— 8.5	8.3	11	91.3	8.3	36	298.8
7.6— 8.0	7.8	16	124.8	7.8	26	202.8
7.1— 7.5	7.3	17	124.1	7.3	30	219.0
6.6— 7.0	6.8	23	156.4	6.8	33	224.4
6.1— 6.5	6.3	20	126.0	6.3	27	170.1
5.6— 6.0	5.8	14	81.2	5.8	29	168.2
5.1— 5.5	5.3	13	68.9	5.3	38	201.4
4.6— 5.0	4.8	12	57.6	4.8	18	86.4
4.1— 4.5	4.3	7	30.1	4.3	10	43.0
3.6— 4.0	3.8	4	15.2	3.8	14	53.2
3.1— 3.5				3.3	3	9.9
2.6— 3.0				2.7	0	0.0
2.1— 2.5				2.3	1	2.3
Sums.....		182 N	1315.1		345 N	2451.0

$$\text{Mean} = \frac{\Sigma f_1 X_i}{N} = \frac{1315.1}{182} = 7.23$$

$$\frac{\Sigma f_2 X_i}{N} = \frac{2451.0}{345} = 7.10$$

APPENDIX C

COMPUTATION OF THE MEAN OF ACHIEVEMENTS IN ARITHMETIC ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN THIRD GRADE

(1)	YOUNG GROUP			OLD GROUP		
GRADE EQUIVALENT	(2) X_i Mid-point	(3) f_1	(4) f_1X_i	(5) X_i Mid-point	(6) f_2	(7) f_2X_i
6.0—6.2	6.1	1	6.1			
5.7—5.9	5.8	0	0.0			
5.4—5.6	5.5	0	0.0			
5.1—5.3	5.2	0	0.0			
4.8—5.0	4.9	0	0.0			
4.5—4.7	4.6	0	0.0	4.6	1	4.6
4.2—4.4	4.3	0	0.0	4.3	1	4.3
3.9—4.1	4.0	5	20.0	4.0	21	84.0
3.6—3.8	3.7	13	48.1	3.7	37	136.9
3.3—3.5	3.4	22	74.8	3.4	53	180.2
3.0—3.2	3.1	33	102.3	3.1	66	204.6
2.7—2.9	2.8	44	123.2	2.8	70	196.0
2.4—2.6	2.5	27	67.5	2.5	39	97.5
2.1—2.3	2.2	10	22.0	2.2	21	46.2
1.8—2.0	1.9	1	1.9	1.9	6	11.4
1.5—1.7	1.6	1	1.6	1.6	1	1.6
Sums.....		157 N	467.5		316 N	967.3

$$\text{Mean} = \frac{\Sigma f_1 X_i}{N} = \frac{467.5}{157} = 2.98$$

$$\frac{\Sigma f_2 X_i}{N} = \frac{967.3}{316} = 3.06$$

APPENDIX D

COMPUTATION OF THE MEAN OF ACHIEVEMENTS IN ARITHMETIC ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN SIXTH GRADE

(1)	YOUNG GROUP			OLD GROUP		
GRADE EQUIVALENT	(2) X_i Mid-point	(3) f_1	(4) f_1X_i	(5) X_i Mid-point	(6) f_2	(7) f_2X_i
9.3—9.7				9.5	1	9.5
8.8—9.2	9.0	2	18.0	9.0	2	18.0
8.3—8.7	8.5	2	17.0	8.5	16	136.0
7.8—8.2	8.0	8	64.0	8.0	11	88.0
7.3—7.7	7.5	13	97.5	7.5	22	165.0
6.8—7.2	7.0	20	140.0	7.0	37	259.0
6.3—6.7	6.5	26	169.0	6.5	56	364.0
5.8—6.2	6.0	38	288.0	6.0	77	462.0
5.3—5.7	5.5	33	181.5	5.5	64	352.0
4.8—5.2	5.0	22	110.0	5.0	30	150.0
4.3—4.7	4.5	15	67.5	4.5	21	94.5
3.8—4.2	4.0	2	8.0	4.0	5	20.0
3.3—3.7	3.5	1	3.5	3.5	2	7.0
Sums.....		182 N	1164.0		344 N	2125.0

$$\text{Mean} = \frac{\Sigma f_1 X_i}{N} = \frac{1164}{182} = 6.40$$

$$\frac{\Sigma f_2 X_i}{N} = \frac{2125}{344} = 6.21$$

APPENDIX E

COMPUTATION OF THE MEAN OF ACHIEVEMENTS IN SPELLING ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN THIRD GRADE

(1)	YOUNG GROUP			OLD GROUP		
GRADE EQUIVALENT	(2) X_i Mid-point	(3) f_1	(4) f_1X_i	(5) X_i Mid-point	(6) f_2	(7) f_2X_i
4.9—5.1	5.0	6	30.0	5.0	11	55.0
4.6—5.1	4.7	7	32.9	4.7	17	79.9
4.3—4.5	4.4	9	39.6	4.4	8	35.2
4.0—4.2	4.1	12	49.2	4.1	30	123.0
3.7—3.9	3.8	12	45.6	3.8	15	57.0
3.4—3.6	3.5	17	59.5	3.5	27	94.5
3.1—3.3	3.2	18	57.6	3.2	37	118.4
2.8—3.0	2.9	27	78.3	2.9	58	168.2
2.5—2.7	2.6	13	33.8	3.6	32	83.2
2.2—2.4	2.3	19	43.7	2.3	27	62.1
1.9—2.1	2.0	7	14.0	2.0	36	72.0
1.6—1.8	1.7	6	10.2	1.7	6	10.2
1.3—1.5	1.4	2	2.8	1.4	10	14.0
1.0—1.2	1.1	3	3.3	1.1	2	2.2
Sums.....		158 N	500.5		316 N	974.9

$$\text{Mean} = \frac{\Sigma f_1 X_i}{N} = \frac{500.5}{158} = 3.17$$

$$\frac{\Sigma f_2 X_i}{N} = \frac{974.9}{316} = 3.08$$

APPENDIX F

COMPUTATION OF THE MEAN OF ACHIEVEMENTS IN SPELLING ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN SIXTH GRADE

(1)	YOUNG GROUP			OLD GROUP		
GRADE EQUIVALENT	(2) X_i Mid-point	(3) f_1	(4) f_1X_i	(5) X_i Mid-point	(6) f_2	(7) f_2X_i
9.5--9.9	9.7	1	9.7	9.7	3	29.1
9.0—9.4	9.2	2	18.4	9.2	6	55.2
8.5—8.9	8.7	7	60.9	8.7	14	121.8
8.0—8.4	8.2	9	73.8	8.2	13	106.6
7.5--7.9	7.7	14	107.8	7.7	19	146.3
7.0—7.4	7.2	27	194.4	7.2	39	280.8
6.5—6.9	6.7	19	127.3	6.7	38	254.6
6.0—6.4	6.2	28	173.6	6.2	45	279.0
5.5—5.9	5.7	21	119.7	5.7	44	250.8
5.0—5.4	5.2	21	109.2	5.2	32	166.4
4.5—4.9	4.7	16	75.2	4.7	37	173.9
4.0—4.4	4.2	6	25.2	4.2	24	100.8
3.5—3.9	3.7	8	29.6	3.7	17	62.9
3.0—3.4	3.2	3	9.5	3.2	11	35.2
2.5—2.9				2.7	0	0.0
2.0—2.4				2.2	0	0.0
1.5—1.9				1.7	0	0.0
1.0—1.4				1.2	0	0.0
.5-- .9				.7	0	0.0
.0— .4				.2	2	.4
Sums.....		182 N	1134.4		344 N	2063.8

$$\text{Mean} = \frac{\Sigma f_1 X_i}{N} = \frac{1134.4}{182} = 6.23$$

$$\frac{\Sigma f_2 X_i}{N} = \frac{2063.8}{344} = 6.00$$

APPENDIX G

COMPUTATION OF THE MEAN OF ACHIEVEMENTS IN ENGLISH ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN FOURTH GRADE

(1)	YOUNG GROUP			OLD GROUP		
GRADE EQUIVALENT	(2) X_i Mid-point	(3) f_1	(4) f_1X_i	(5) X_i Mid-point	(6) f_2	(7) f_2X_i
9.3—9.7	9.5	2	19.0	9.5	1	9.5
8.8—9.2	9.0	0	0.0	9.0	0	0.0
8.3—8.7	8.5	1	8.5	8.5	2	17.0
7.8—8.2	8.0	3	24.0	8.0	5	40.0
7.3—7.7	7.5	7	52.5	7.5	6	45.0
6.8—7.2	7.0	5	35.0	7.0	10	70.0
6.3—6.7	6.5	11	71.5	6.5	21	136.5
5.8—6.2	6.0	26	156.0	6.0	41	246.0
5.3—5.7	5.5	15	82.5	5.5	32	176.0
4.8—5.2	5.0	17	85.0	5.0	31	155.0
4.3—4.7	4.5	17	76.5	4.5	32	144.0
3.8—4.2	4.0	18	72.0	4.0	39	156.0
3.3—3.7	3.5	22	77.0	3.5	40	140.0
2.8—3.2	3.0	16	48.0	3.0	21	63.0
2.3—2.7	2.5	13	32.5	2.5	21	52.5
1.8—2.2	2.0	5	10.0	2.0	26	52.0
Sums.....		178	850.0		328	1502.5

$$\text{Mean} = \frac{\Sigma f_1 X_i}{N} = \frac{850.0}{178} = 4.77$$

$$\frac{\Sigma f_2 X_i}{N} = \frac{1502.5}{328} = 4.58$$

APPENDIX H

COMPUTATION OF THE MEAN OF ACHIEVEMENTS IN ENGLISH ON METROPOLITAN ACHIEVEMENT TEST GIVEN IN SIXTH GRADE

(1)	YOUNG GROUP			OLD GROUP		
GRADE EQUIVALENT	(2) X_i Mid-point	(3) f_1	(4) f_1X_i	(5) X_i Mid-point	(6) f_2	(7) f_2X_i
12.0—12.4	12.2	1	12.2			
11.5—11.9	11.7	0	0.0			
11.0—11.4	11.2	5	56.0	11.2	12	134.4
10.5—10.9	10.7	1	10.7	10.7	5	53.5
10.0—10.4	10.2	9	91.8	10.2	8	81.6
9.5— 9.9	9.7	4	38.8	9.7	5	48.5
9.0— 9.4	9.2	8	73.6	9.2	10	92.0
8.5— 8.9	8.7	14	121.8	8.7	17	147.9
8.0— 8.4	8.2	12	98.4	8.2	29	237.8
7.5— 7.9	7.7	15	115.5	7.7	30	221.0
7.0— 7.4	7.2	19	136.8	7.2	35	252.0
6.5— 6.9	6.7	16	107.2	6.7	32	204.4
6.0— 6.4	6.2	15	93.0	6.2	37	229.4
5.5— 5.9	5.7	21	119.7	5.7	34	183.8
5.0— 5.4	5.2	15	78.0	5.2	32	166.4
4.5— 4.9	4.7	13	61.1	4.7	21	98.7
4.0— 4.4	4.2	10	42.0	4.2	19	79.8
3.5— 3.9	3.7	3	11.1	3.7	5	18.5
3.0— 3.4	3.2	1	3.2	3.2	9	28.8
.0— 2.9				1.45	4	5.8
Sums.....		182	1270.9		344	2284.3

$$\text{Mean} = \frac{\Sigma f_1 X_i}{N} = \frac{1270.9}{182} = 6.98$$

$$\frac{\Sigma f_2 X_i}{N} = \frac{2284.3}{344} = 6.64$$

APPENDIX I

COMPUTATION OF THE MEAN OF INTELLIGENCE QUOTIENTS

(1) SCORES	YOUNG GROUP (2) X_i Mid-point	(3) f_1	(4) f_1X_i	OLD GROUP (5) X_i Mid-point	(6) f_2	(7) f_2X_i
145—149	147	1	147	147	1	147
140—144	142	4	568	142	4	568
135—139	137	4	548	137	2	274
130—134	132	9	1188	132	10	1320
125—129	127	13	1651	127	31	3937
120—124	122	25	3050	122	28	3416
115—119	117	21	2457	117	40	4680
110—114	112	31	3472	112	62	6944
105—109	107	21	2247	107	47	5029
100—104	102	26	2652	102	40	4080
95— 99	97	10	970	97	35	3395
90— 94	92	9	828	92	25	2300
85— 89	87	3	261	87	8	696
80— 84	82	4	248	82	11	902
75— 79	77	1	77	77	2	154
70— 74	72	1	72			
Sums.....		183 N	20436		346 N	37842

$$\text{Mean} = \frac{\Sigma f_1 X_i}{N} = \frac{20436}{183} = 111.67$$

$$\frac{\Sigma f_2 X_i}{N} = \frac{37842}{346} = 109.37$$